

THE AVIFAUNA OF THE BARITO ULU REGION, CENTRAL KALIMANTAN

by

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Summary

As part of the more general studies of the Barito Ulu Project, a detailed study was made of the avifauna in July-September 1989. The survey area, which lies at the geographical centre of the island of Borneo, consists mainly of primary forest in hilly terrain, and this is the first detailed study that has been made in the hills of Kalimantan for many decades. A week was also spent in montane forest at 800-1000 m.

An appendix lists 226 species that were recorded. The avifauna includes 15 Bornean endemics, and extensions to known range are made for *Spizaetus alboniger*, *Arborophila hyperythra* and *Megalaima eximia*. Data are provided also on 20 species for which there are no recent Kalimantan records.

While species described as 'slope specialists' predominated, the presence of some 26 'extreme lowland specialists' may have significance for conservation, for example *Lophura erythrophthalma*, *Melanoperdix nigra*, *Pitta baudi*, *Malacopteron albogulare* and *Pityriasis gymnocephala*.

Ringkasan

Telah dilaksanakan suatu penelitian mendalam tentang fauna burung di daerah Barito Ulu pada bulan Juli-September 1989, sebagai bagian dari proyek Barito Ulu. Ini merupakan penelitian mendalam pertama yang pernah dilakukan di perbukitan Kalimantan, untuk beberapa dekade terakhir ini. Juga dilakukan penelitian selama satu minggu di daerah pegunungan pada ketinggian 800-1000 m. Daerah penelitian terletak di tengah pulau Kalimantan yang terutama terdiri dari hutan primer perbukitan.

Selama penelitian telah tercatat sebanyak 226 jenis burung, termasuk 15 jenis endemik Kalimantan dan ditambah catatan perluasan sebaran untuk jenis-jenis *Spizaetus alboniger*, *Arborophila hyperythra* and *Megalaima eximia*. Juga disajikan data 20 jenis burung yang tidak tercatat lagi di Kalimantan untuk kurun waktu terakhir ini.

Meskipun jenis-jenis burung yang ditemukan didominasi oleh "spesialis lereng", tetapi kehadiran 26 jenis yang merupakan spesialis dataran rendah sejati" tampaknya memiliki kepentingan yang nyata untuk konservasi, seperti *Lophura erythrophthalma*, *Melanoperdix nigra*, *Pitta baudi*, *Malacopteron albogulare* and *Pityriasis gymnocephala*.

Introduction

Between 24 July and 14 September 1989, under the auspices of Project Barito Ulu, the authors surveyed the avifauna (and mammals) of the Upper Barito region. Central Kalimantan, near the geographical centre of Borneo. Observations were made along the rivers Busang and Murung, tributaries to the River Barito, above their confluence at Muara Joloi (114° 06'E, 0° 02'S), concentrating on three study sites of approx 150 ha each.

The area is generally hilly. Undulating ground from around 120 m in the lower Murung drainage gives way to an increasingly steep-sided system of ridges and valleys further north on the Busang where altitudes range between 130-250 m. Rivers are fast-flowing with rapids and, in the upper reaches, foothills of the Muller Mountains at up to 1000 m lie within a few kilometers of the river.

Forest cover is varied with Dipterocarp-dominated valleys giving way to extensive areas of low-canopy, poor-soil forest on ridges. Above 800 m vegetation is of lower montane type with 'moss forest' in hollows and small areas of more stunted growth on exposed high points (provisional identification and nomenclature of forest types follows Whitmore, 1984). Human influence is largely confined to the banks of navigable rivers where secondary forest of all ages exists, although commercial logging has now extended north beyond Muara Joloi.

Two sites comprising both primary and secondary forest at 120-250 m received fairly full coverage with 196 species recorded between them in 35 days, while six days at 800-1000 m yielded 101: further time at this altitude would doubtless reveal additional montane species.

A total of 226 species was recorded (see appendix) including 15 endemic to Borneo. Excluding 7 (possibly 6) long-distance migrants, all are resident, or nomadic within Borneo, and may breed in the area.

Species of particular interest were as follows.

Macheiramphus alcinus **Bat Hawk**. Two sightings of single birds. The only other recent Kalimantan records are from Tanjung Puting (Nash & Nash, 1988). This species may be declining in Borneo (Thiollay, 1983).

Pemis ptilorhynchus **Crested Honey-buzzard**. The most commonly observed raptor (11 records; closely followed by Crested Goshawk *Accipiter trivirgatus* with 10 records), as found by Thiollay (1983) in Malaysian Borneo, although noted to be sparsely distributed by Smythies (1981).

Haliastur indus **Brahminy Kite**. Regular along the lower stretches of the Murung and Busang below 250 m.

Spizaetus alboniger **Biyth's Hawk-Eagle**. One sighting, of an adult, at 130 m. No previous records confirmed for Kalimantan although birds probably of this species have been seen (e.g. Holmes & Burton 1987). Various authors (e.g. Thiollay 1983, van Marle & Voous 1988) have commented on its preference for submontane localities elsewhere, replacing the predominantly lowland Wallace's Hawk-Eagle *S. nanus*.

Ichthyophaga ichthyaetus **Grey-headed Fish-eagle**. One sighting on the Busang in hilly, forested terrain. The diagnostic tail pattern was seen well at close range. Apparently scarce throughout Borneo; Holmes & Burton (1987) have records only from the Barito swamps. Although "chiefly a bird of the middle and upper rivers" according to Smythies (1981) most other recent reports appear to be coastal (as was our other sighting at Banjarmasin).

Hieraetus kienerii **Rufous-bellied Eagle**. Three sightings at 250 m. Holmes & Burton (1987) report no recent Kalimantan records while Smythies (1981) regarded it as of "rare and uncertain status".

Arborophila hyperythra **Red-breasted Partridge**. Two sightings involving four birds at 850-950 m. This appears to represent a considerable range extension, in the order of some 150 km, to the south-west of the upper Kayan - the nearest recorded by Smythies (1981). There are no recent Kalimantan reports of this Bornean endemic, although this is most likely related to the paucity of fieldwork and it is not generally considered threatened.

Melanoperdix nigra **Black Wood Partridge**. Six sightings (five singles and one pair) in six days at 800-900 m allowed confirmation of identification; amongst small Bornean phasianids the all-black plumage of the males is diagnostic while females are dull chestnut with pale throat and lower belly. Regarded as a lowland specialist by Wells (1985), there are few recent records in any part of its limited Sundaic range. Its discovery at this altitude, although initially surprising, corresponds with others on Mount Kenepai, West Kalimantan (Buttikofer 1897), where it was common at 550 m, and in the Kelabit Uplands (Smythies 1981). A reassessment of habitat requirements may thus be necessary although further work is necessary to establish its real status in the Bornean interior. Most recently Holmes (1989) concluded that "the species may be relatively secure, but very difficult to

Lophura erythrophthalma **Crestless Fireback**. Two sightings (one pair plus a single bird) at 150-200 m. This indicates a local population density of the same order as that of *L. ignita*: a marked contrast with its extreme scarcity elsewhere in Indonesia. Holmes (1989) gives only one recent Sumatran record and one in Kalimantan, although in peninsula Malaysia this species is more common (F. Lambert pers. comm. 1990). Again, our records suggest that this species may not be confined to purely lowland forest and hence less acutely threatened by the loss of this habitat. Similarly, in Sarawak Fogden (1976) recorded it in 'mountainous' terrain at Tutoh and Davison (1980, 1981) suggested that it may be a hill species here.

Lophura ignita **Crested Fireback**. Two sightings at 130-230 m. Regarded as potentially threatened by Collar & Andrew (1988) although, as noted by Holmes (1989), in Indonesia it is more common than *L. erythroptalma*.

Lophura bulweri **Bulwer's Pheasant**. Three sightings at 150-250 m plus two trapped by local villagers. In view of the difficulties of observing pheasants this may indicate a relatively high density. Destruction of submontane forest in Sabah is believed to be threatening this endemic pheasant (Sheldon 1986): it is little known with few recent reports (Kavanagh in Collar & Andrew 1988, Mann 1989, Rice 1989, Scriven in ICBP *World Birdwatch* Jan/Feb 1989, F.R. Lambert *in litt.* 1991). Smythies, however, considered it locally very common, and in Kalimantan the paucity of records may be more related to a lack of observers.

Actitis hypoleucos **Common Sandpiper**. First seen on 28 July, and then daily from 1 August, with downstream movement from late August clearly indicating overland migration.

Treron capellei **Large Green Pigeon**. Five sightings of singles or pairs, usually in flight. Classified as potentially threatened by Collar & Andrew (1988).

Cuculus vagans **Moustached Hawk-Cuckoo**. Three sightings (including one trapped in moult) at 130-150 m in low-canopy secondary forest. Holmes and Burton (1987) reported calls probably of this species at several Kalimantan localities adding to two in Smythies (1981) but its status remains poorly known.

Phaenicophaeus javanicus **Red-billed Malkoha**. Three sightings at 130-900 m. Holmes & Burton (1987) give one locality only.

Hirundapus sp. **Single Needletails** were seen on four occasions. On 29/8 and 4/9 they were thought to show characters closer to *H. giganteus* but on 6/9 and 8/9 were possibly *H. caudacutus* on limited views obtained. The dates and brief stays of these birds suggests that they may have been migrants. In peninsula Malaysia Medway and Wells (1976) give earliest dates for migrant *H. giganteus* and *H. caudacutus* as as 3/9 and 30/9 respectively.

Harpactes ororophaeus **Cinnamon-rumped Trogon**. One sighting at 150 m. There are no other recent Kalimantan records.

Harpactes oreskios **Orange-breasted Trogon**. The commonest trogon at 800-950 m, with five sightings in six days, noisy and conspicuous.

Berenicomis comatus **White-crested Hornbill**. Three sightings, of two singles and a pair, at 130-250 m. The only other recent Kalimantan records are from the Schwaner range (Rice 1989) and Gunung Palung (K. MacKinnon *in litt.* 1989).

Rhyticeros corrugatus **Wrinkled Hombill**. Four records at 130-200 m in hill Dipterocarp forest included one sighting of two birds flying over at considerable height. Generally considered an extreme lowland specialist (Wells 1985).

Rhinoplax vigil **Helmeted Hornbill**. Conspicuous and widespread in small numbers. Although classified as potentially threatened by Collar & Andrew (1988) in Borneo this species is not uncommon and is most characteristic of hill forests inland which are under less immediate threat from deforestation.

Anthracoceros malayanus **Black Hombill**. One of the commoner hombills at 120-250 m.

Megalaima eximia **Black-throated Barbel**. One sighting at 900 m with calls matching those described in Francis (1984) heard on two further dates. One individual was seen feeding in typical barbet fashion in a fruiting tree in association with *M. australis* and *M. chrysopogon*. The only other recent Kalimantan record is from Gn. Nyiut (Prieme & Heegaard 1988).

Megalaima monticola **Mountain Barbet**. Three seen at 850 m, initially in a mixed species flock in the lower storey.

Dinopium rafflesii **Olive-backed Woodpecker**. Occasional records from 120-900 m, perhaps most common above 750 m, sometimes in mixed species flocks in the lower storey.

Pitta arquata **Blue-banded Pitta**. Recorded on nineteen dates at 130-250 m although seen only five times. The call is a low monotone whistle, slightly higher-pitched towards the end, shorter and more quavering than that of *P. granatina* (pers. obs.), similar to *P. venusta usheri* and *Eupetes macrocerus* (F. Lambert *in litt.* 1989) however, we are not familiar with the latter two species. Although this endemic is omitted from Collar & Andrew (1988) there are no recent Kalimantan records. The distributional relationship with its lowland equivalent *P. granatina* in Kalimantan requires some clarification but *P. granatina* appears to occur in flatter more extreme lowland sites. We would strongly support the classification of this species as a 'slope specialist' (Wells 1985); while birds were encountered in a variety of forest types they were consistently on steep gradients away from the rivers.

Pitta baudi **Blue-headed Pitta**. Recorded on ten dates at 120-250 m although seen on only three occasions. The call identified, a loud, distinctive "kiaouw" is presumably that described by de Silva (1981). Most were in tall forest with little undergrowth; although some areas supported both *P. baudi* and *P. arquata*, the present species appeared more characteristic of the level river terraces. Blue-headed Pittas are known to be locally common in lowland Sabah and Sarawak (Smythies 1981) but there are no recent Kalimantan records.

Pitta moluccensis (**Lesser Blue-winged Pitta**). Two repeatedly seen in damp streambeds amongst riverside secondary vegetation at 200 m on 29/8 provided close range views of all distinctive plumage features, lacking the narrow, buffy white eyebrow of Fairy Pitta *P. nympha*. Two further possible sightings on 12/9 were in less disturbed, although again riparian, habitat. Medway & Wells (1976) give the earliest dates south of the breeding grounds in peninsula Malaysia as 25/9: there is the possibility that this species may breed in Borneo (Smythies 1981).

Coracina larvata **Black-faced (Sunda) Cuckoo-shrike**. Two sightings at 800-900 m. There appear to be no previous references to its occurrence in Kalimantan.

Hemipus picatus **Bar-winged Flycatcher-shrike**. Regularly seen at 750-1000 m. There are few other recent Kalimantan records (Holmes & Burton 1987) although Buttikofer (1897) collected three on nearby Mount Liang Kubun in the last century.

Pycnonotus melanoleucos **Black-and-White Bulbul**. Fluctuating numbers around fruiting bushes at 130 m in late July, with up to 7 seen daily in late July, numbers decreasing as the crop became exhausted.

Pycnonotus zeylanicus **Straw-headed Bulbul**. Common in primary and secondary riverside vegetation along the rivers Busang and Murung but not seen anywhere south of Muara Joloi.

Pycnonotus melanicterus **Black-crested Bulbul**. Two sightings at 800-950 m. These are the only recent Kalimantan records.

Setomis criniger **Hook-billed Bulbul**. Occasional records in primary forest at all sites visited (120-900 m), totalling 22 bird-days with group sizes of up to four. Marked habitat preference was shown for 'poor quality' forest as documented by Sheldon (1987) although birds were also seen at higher altitude than expected. In contrast to another poor forest species, Grey-breasted Babbler *Malacopteron albogulare*, *Setornis* were felt to be less common at Barito Ulu than in peat swamp at Tanjung Puting. 'Kerangas specialists' have been further discussed in Dutson *et al.* (1991).

Eupetes macrocerus **Malaysian Rail-babbler**. One sighting of a pair at 900 m. Monotone whistles were regularly heard but never definitely attributable to anything other than *Pitta arquata*.

Trichastoma pyrrhogenys **Temminck's Babbler**. Eight birds recorded on two dates at 850-950 m. The only other recent Kalimantan records are from Gn. Nyiut (Prieme & Heegaard 1988).

Trichastoma sepiarium **Horsfield's Babbler**. Occasionally seen at 120-950 m. Although considered locally common by Smythies (1981) no recent Kalimantan records are given by Holmes & Burton (1987).

Malacopteron albugulare **Grey-breasted (White-throated) Babbler.** Common at 120-250 m where recorded on 23 dates with up to eight per day on the Murung and a maximum of six on the Busang; two pairs were also seen at 850 m. Although initially elusive, with increasing observer familiarity this species was more easily found; on several occasions the observer's attention was attracted by the persistent 'churring' alarm notes of birds mobbing him. Two birds were trapped and photographed confirming the identification in the field, which is complicated by a misleading illustration in Smythies (1981). In reality they appeared less upright, shorter-tailed and with a longer supercilium than the bird depicted, being quite different in character to other *Malacopteron* species. This species was typically found in singles or pairs, foraging from just above ground level to 2 m and was commonest in 'poor quality' forest as found by Sheldon (1987). However, at Barito Ulu birds were also frequent in adjacent Dipterocarp forest and degraded vegetation, a situation akin to that described by Wells (in Sheldon 1987) from Peninsula Malaysia. Further, for a species usually considered typical of level ground the hilly terrain at Barito Ulu is also unusual. It now appears, as suggested by Holmes & Wall (1989), that the habitat requirements of *M. albugulare* are less rigorous than for Hook-billed Bulbul *Setomis criniger*; another 'kerangas specialist' (Sheldon 1987). In contrast to this species. Grey-breasted Babblers were found to be markedly more common at Barito Ulu than in peat swamp at Tanjung Puting (pers. obs.). Their occurrence is discussed further in Dutson *et al.* (1991).

Malacopteron magnum **Rufous-crowned Babbler.** Very common at lower altitudes, but also frequent at 750-1000 m where it was one of the few birds recorded in the stunted vegetation on extreme high points.

PtilocicMa leucogrammica **Bornean Wren-Babbler.** Commonly heard though sparsely distributed and irregularly seen at 120-500 m. There are no recent Kalimantan records of this endemic species and only three records given in Smythies (1981). The distinctive call is a clear double whistle.

Kenopia striata **Striped Wren-Babbler.** Fairly common at 120-250 m. There are no recent Kalimantan records. The call is a diagnostic short, monotone whistle with an initial stutter.

Napothera epilepidota **Eye-browed Wren-Babbler.** Three records (of two to three birds) at 800-900 m. The only other recent Kalimantan records are from similar altitudes on Gn. Nyiut (Prieme & Heegaard 1988).

Macronous ptilosus **Fluffy-backed Tit Babbler.** Despite the lowland bias in records elsewhere (Smythies 1981, Kingeta/. 1975) this species was commonest at 750-1000 m including the lowest-stature moss forest where 18 bird-days were recorded over six dates. At lower altitude (120-250 m), there were 37 bird days over 35 dates, both in primary and secondary vegetation.

Urosphena (Cettia) whiteheadi **Short-tailed Bush Warbler**. Two records (of two and three birds) at 800-900 m. These are the only recent Kalimantan records of this endemic. Buttikofer (1897) recorded two on nearby Mount Liang Kubun at 900 m.

Locustella certhiola **Pallas' Grasshopper Warbler**. One on 13/09 in an overgrown clearing, an early date for this migrant. Brief unobscured views were obtained, showing the broad creamy supercilium, rufous rump and restricted streaking characteristic of this species.

Rhipidura albicollis **White-throated Fantail**. One record at 850 m showing pale underparts closer to those of *R.a.sarawacensis* than *R.a.kinabalu*. The former is known from the mountains of extreme western Sarawak and the latter from the uplands of northeastern Sarawak and Sabah: this record is particularly interesting since it lies almost midway geographically between the two populations.

Muscicapa sp. A flycatcher of this genus on 9-10/09 showed features closest to Dark-sided Flycatcher *M. sibirica*. A prominent white half-collar, marked off-white eyering, ill-defined pale wing-bar, all dark bill (both mandibles) and a 'twp' call were considered more compatible with *M. sibirica* than the streaked resident race of Asian Brown Flycatcher *M. latirostris umbrosa*. However, identification remains tentative in view of lack of experience with either of these confusing species.

Cyomis concrete. **White-tailed (Dark Blue) Flycatcher**. Four sightings at 120-900 m. There are no other recent Kalimantan records.

Cyornis superba **Bornean Blue Flycatcher**. Two sightings at 130 m in relatively high Dipterocarp forest. There are no other recent Kalimantan records of this endemic which is little known throughout Borneo.

Muscicapella hodgsoni **Pygmy Blue Flycatcher**. One sighting of a singing male at 850 m in lower montane forest; the first Kalimantan record. In Borneo this species is otherwise known only from Mts Kinabalu, Mulu and Dulit (Smythies 1981), where it has been recorded between 1200-1800 m, notably on Mulu where it is upper montane; elsewhere in south-east Asia it has been found down to 900 m (King *et al.* 1975).

Rhinomyias olivacea **Fulvous-chested Flycatcher**. *Rhinomyias* flycatchers recorded on five dates at 120-150 m appeared closest to this species in plumage and had a slightly different song to *R. umbratilis*. However, several birds appeared intermediate in plumage and the species is unconfirmed.

Rhinomyias ruficauda **Rufous-tailed Flycatcher**. Three sightings at 850-950 m. This species is restricted to the Philippines and Borneo, where its status is poorly known. The only previous Kalimantan record dates from the last century on Mount Liang Kubun (Buttikofer 1897).

Pachycephala hypoxantha **Bornean Mountain Whistler**. One sighting at 850 m. Also recorded by Prieme and Heegaard (1988) on Gn. Nyiut; these constitute the only recent Kalimantan records of this Bornean endemic.

Prionochilus xanthopygius and *P. percussus* **Yellow-rumped** and **Crimson-breasted Flowerpeckers**. These species, sympatric at Barito Ulu, were recorded regularly in small numbers; the former the more frequently encountered of the two below 250 m but marginally less common at 750-1000 m. Although limited views did not allow specific identification of many individuals, male *P. percussus* when seen well were consistently separable through their lack of yellow rump or white moustachial stripe and paler blue upperparts. Barito Ulu lies within the area of overlap between the ranges of these species:

P. percussus is essentially confined to southern Borneo while *xanthopygius* predominates in Sarawak and Sabah. Although no evidence of interbreeding was noted, further work would be needed to rule this out.

Zosterops everetti **Everett's White-eye**. Seven sightings of up to six birds in secondary growth at 130 m. Although widespread in Malaysian Borneo these are the first records of this species for Kalimantan. Close observation confirmed the lack of yellow above the eyestripe, the dark grey flanks and high-pitched slightly wheezing call distinct from those features of *Z. palpebrosa*.

Oculocincta squamifrons **Pygmy White-eye**. One flock of eight birds at 850 m in lower montane forest with a canopy height of around 20 m. Little is known of this elusive endemic: there are no other recent records for Kalimantan and few anywhere, although away from the study site we also found it at lower altitude (50 m) at Puruk Cahu on the Barito. Here they were found in secondary growth (canopy approximately 15 m) on a steep riverside hill *vnt* *Abroscopus superdliaris*, another 'submontane' species.

Pityriasis gymnocephala **Bornean Bristlehead**. Three sightings of small groups at 120-200 m. Two birds were seen in the village at Muara Joloi and the others in primary forest.

Erythrura prasina **Pin-tailed Parrotfinch**. Three sightings of single birds visiting secondary scrub adjacent to primary forest. There is thought to be no rice cultivation within at least 50 kilometers, suggesting that this may not always be the staple diet as seen in immigrant birds elsewhere in Borneo (Harrisson in Smythies 1981). Its status remains somewhat mysterious; Holmes & Burton (1987) give no recent Kalimantan records.

Species not recorded during the survey include White-shouldered Ibis *Pseudibis davisoni* which has been reported from the Barito immediately south of the study area (Smythies 1981). Specific effort was made to locate this species by boat along the rivers Murung and Busang without success, although it has subsequently been recorded on the upper Mahakam River in East Kalimantan (Silvius & Verheugt 1989; Petersen, this issue).

Discussion

In their overview of recent ornithological work in Kalimantan, Holmes and Burton (1987) decry the notable lack of field studies over the past fifty years: in particular, inland areas are very poorly known. A handful of brief visits since then (e.g. Prieme & Heegaard 1988 - Gunung Nyiut; Rice 1989 - Schwaner range) add to this paper in forming the basis of current knowledge. The Barito Bird Project is thus the only recent attempt to document comprehensively the avifauna of any part of the interior; twenty species were recorded for which there are no recent Kalimantan records.

Although lowland sites have rightly attracted most attention throughout Borneo as a result of increasing human pressure, it is also important to put our knowledge of such forests into perspective with data from more secure areas.

Major features of our results are the high species diversity - comparable to any equivalent lowland site - and the sympatry of species characteristic of both lowland and submontane (and, to a lesser extent, montane) forests. Hence, 26 of 49 Bornean species classified by Wells (1985) as 'extreme lowland specialists' were recorded in this inland, predominantly hill Dipterocarp forest and five of these ranged above 800 m into lower montane forest. Although, in almost all cases, the populations of these species are, without doubt, predominantly lowland, their reliance upon this habitat may not be as heavy as was previously believed. The dependence of such hill populations, on a short- or long-term basis, on immigrants from 'richer' lowland sites is debatable. For mobile species such as *Treron capellei*, *T. olax* and *Rhyticeros corrugatus*, it is certainly possible that, in isolation, hill forests would not support viable numbers, while in other cases, such as *Lophura erythrophthalma*, *Melanoperdix nigra*, *Pitta baudii*, *Malacopteron albobogulare* and *Pityriasis gymnocephala*, they are more likely to have real conservation significance.

The presence of 21 of Wells' 31 Bornean 'slope specialists' indicates the strongest affinities of the Barito Ulu avifauna, strongly reflecting habitat type. While this community is arguably less at risk from human pressure (at least in Kalimantan; though for Sabah see Sheldon 1986), they are also poorly-known in many cases. Full details on records of *Lophura bulweri*, *Berenicomis comatus*, *Pitta arquata*, *Cyomis superba* and *Oculocincta squamifrons* will be published in due course (Wilkinson *et al.* in press).

In no way were we able to attempt a comprehensive assessment of montane species during the limited period of work above 800 m. Although a high proportion of the fifteen montane species (as classified by Wells 1985) recorded represent the only recent Kalimantan records, this no doubt reflects a paucity of fieldwork rather than genuine rarity in almost all cases. Perhaps of most significance are records of *Rhinomyias ruficauda* and *Muscicapella hodgsoni* with a range extension for *Arborophila hyperythra* as mentioned above.

Fifteen species endemic to Borneo were recorded. At sites below 250 m, eight endemic species represent 3.9% of all those found, comparable with other inland sites such as Danum Valley in Sabah with ten endemics (F.R. Lambert *in litt.* 1990) and Tutoh in Sarawak with nine (Fogden 1976). Away from the interior, lowland sites such as Tanjung Puting and Kutai in Kalimantan typically show a lower degree of endemism (two and four species respectively). The presence of seven further endemics at higher altitude (750-1000 m) endorses the suggestion that, with more fieldwork, the interior of Kalimantan will prove to possess a similar avifauna to better known areas at similar altitude in Malaysian Borneo. A review of endemic Bornean species reveals that from a total of 35 (dependent on taxonomy) all but nine are represented in Kalimantan.

Occurrence of endemic Bornean bird species in Kalimantan:

Recorded from Kalimantan

Arborophila hyperythra 5,10
Lophura bulweri 5,9,10
Polyplectron schleiermachersi 5,7
Batrachostomus harterti 5
Batrachostomus (polioloophus) mixtus 3
Megalaima monticola 5,8,10
Megalaima eximia 8,10
Calyptomena hosei 1,5
Pitta arquata 4,5,10
Pitta baudii 5,10
Chlamydochaera jefferyi 8,9
Myiophonus (glaucinus) borneensis 5
Trichastoma perspicillatum 5
Ptilocichia leucogrammica 5,10
Napothera atrigularis 1
Napofitiera crassa 8
Yuhina everetti 5,8,10
Urosphena (Cettia) whitlieadi 1,10
Cyomis superba 10
Pachycephala hypoxantha 8,10
Prionochilus xanthopygius 5,7,10
Dicaeum monticulum 5
Oculocincta squamifrons 5,10
Chlorocharis emiliae 8
Pityriasis gymnocephala 5,6,10
Lonchura fuscans 5,6,7,10

Not recorded from Kalimantan

Spilomis kinabaluensis
Microhierax latifrons
Harpactes whiteheadi
Calyptomena whiteheadi
Pitta (granatina) ussheri
Zoothera everetti
Bradypterus accentor
Arachnothera juliae
Oriolus hosei
 N.B. *Both Calyptomena whiteheadi and Oriolus hosei are known from G. Batu Tibang in Sarawak, adjacent to the Kalimantan border (Mjoberg 1926).*

1: Buttikofer 1897, 2: Mjoberg 1926, 3: Smythies 1957, 4: Voous 1961, 5: Smythies 1981, 6: Nash & Nash 1988, 7: Holmes & Burton 1987, 8: Prieme & Heegaard 1988, 9: Rice 1989, 10: present paper.

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A full account of the Barito Bird Project and its findings will be published in the near future (Wilkinson *et al.* in press).

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Appendix: Systematic list

Nomenclature follows King *et al.* (1975) with Bornean endemics from Smythies (1981). In the few cases where this is modified the equivalents from these texts are given in parentheses.

* endemic

+ non-breeding migrant

M recorded only above 800 m

L recorded only below 250 m

W recorded at a wide range of altitudes

<i>Anhinga melanogaster</i>	L	<i>Chalcophaps indica</i>	L
<i>Aviceda jerdoni</i>	L	<i>Psittinus cyanurus</i>	L
<i>Pemis pitlorhynchus</i>	L	<i>Loriculus galgulus</i>	L
<i>Macheirhamphus alcinus</i>	L	<i>Cuculus vagans</i>	L
<i>Haliastur Indus</i>	L	<i>Cacomantis merulinus</i>	L
<i>Ichthyophaga humilis (nana)</i>	L	<i>Phaenicophaeus diardi</i>	L
<i>Ichthyophaga ichthyaetus</i>	L	<i>Phaenicophaeus sumatranus</i>	W
<i>Spilomis cheela</i>	W	<i>Phaenicophaeus chlorophaeus</i>	L
<i>Accipiter trivirgatus</i>	W	<i>Phaenicophaeus javanicus</i>	W
<i>Ictinaetus malayensis</i>	L	<i>Phaenicophaeus curvirostris</i>	L
<i>Hieraaetus kienerii</i>	L	<i>Centropus bengalensis/ rectunguis</i>	L
<i>Spizaetus alboniger</i>	L	<i>Phodilus badius</i>	L
<i>Microhierax fringillarius</i>	L	<i>Strix leptogrammica</i>	L
<i>Melanoperdix nigra</i>	M	<i>Eurystopodus temmincldi</i>	W
<i>Arborophila hyperythra</i>	M*	<i>Collocalia maxima</i>	L
<i>Lophura erythrophthalma</i>	L	<i>Collocalia vanikorensis/ fuciphaga</i>	L
<i>Lophura ignita</i>	L	<i>Collocalia esculenta</i>	W
<i>Lophura bulweri</i>	L*	<i>Hirundapus giganteus/ caudacutus</i>	L+
<i>Argusianus argus</i>	W	<i>Rhaphidura leucopygialis</i>	L
<i>Actitis hypoleucos</i>	L+	<i>Apus affinis</i>	L
<i>Treron curvirostra</i>	W	<i>Hemiprocne longipennis</i>	L
<i>Treron olax</i>	L	<i>Hemiprocne comata</i>	W
<i>Treron capellei</i>	L	<i>Harpactes kasumba</i>	W
<i>Ptilinopus jambu</i>	W	<i>Harpactes diardii</i>	W
<i>Ducula aenea</i>	L	<i>Harpactes orrhophaeus</i>	L
<i>Macropygia ruficeps</i>	L	<i>Harpactes duvaucelii</i>	W
<i>Macropygia emilitiana(phasianella)</i>	L	<i>Hirundo tahitica</i>	L
<i>Harpactes oreskios</i>	M	<i>Hemipus picatus</i>	M

<i>Alcedo meninting</i>	L	<i>Hemipus hirundinaceus</i>	L
<i>Alcedo euryzona</i>	L	<i>Tephrodomis gularis(virgatus)</i>	L
<i>Ceyx erithacus</i>	L	<i>Coracina larvata</i>	M
<i>Halcyon chloris</i>	L	<i>Coracina striata</i>	L
<i>Lacedo pulchella</i>	L	<i>Coracina fimbriata</i>	L
<i>Nyctyomis amictus</i>	L	<i>Pericrocotus flammeus</i>	M
<i>Berenicomis comatus</i>	L	<i>Aegithina viridissima</i>	W
<i>Anorrhinus galeritus</i>	W	<i>Chloropsis cyanopogon</i>	W
<i>Rhyticeros undulatus</i>	W	<i>Chloropsis sonnerati</i>	W
<i>Rhyticeros corrugatus</i>	L	<i>Chloropsis cochinchinensis</i>	W
<i>Anthracoceros malayanus</i>	L	<i>Pycnonotus zeylanicus</i>	L
<i>Buceros rhinoceros</i>	W	<i>Pycnonotus melanooleucos</i>	L
<i>Rhinoplax vigil</i>	W	<i>Pycnonotus atriceps</i>	L
<i>Megalaima chrysopogon</i>	W	<i>Pycnonotus melanicterus</i>	M
<i>Megalaima rafflesii</i>	L	<i>Pycnonotus cyaniventris</i>	W
<i>Megalaima mystacophanos</i>	W	<i>Pycnonotus eutilotus</i>	L
<i>Megalaima henricii</i>	W	<i>Pycnonotus plumosus</i>	L
<i>Megalaima monticola</i>	M*	<i>Pycnonotus simplex</i>	W
<i>Megalaima eximia</i>	M*	<i>Pycnonotus brunneus</i>	W
<i>Megalaima australis</i>	W	<i>Pycnonotus erythropthalmos</i>	L
<i>Calorhamphus fuliginosus</i>	W	<i>Criniger finschii</i>	L
<i>Sasia abnormis</i>	W	<i>Criniger ochraceus</i>	M
<i>Micropternis brachyurus</i>	L	<i>Criniger bres</i>	L
<i>Picus puniceus</i>	W	<i>Criniger phaeocephalus</i>	W
<i>Picus mentalis</i>	W	<i>Setomys criniger</i>	W
<i>Dinopium rafflesii</i>	W	<i>Hypsipetes criniger</i>	L
<i>Meigtyptes tristis</i>	L	<i>Hypsipetes charlottae</i>	L
<i>Meigfypetes tukki</i>	W	<i>Hypsipetes malaccensis</i>	W
<i>Mulleripicus pulverulentus</i>	L	<i>Hypsipetes flavala</i>	M
<i>Dryocopus javensis</i>	L	<i>Dicrurus aenus</i>	W
<i>Hemicircus concretus</i>	L	<i>Dicrurus hottentottus</i>	M
<i>Btythipicus rubiginosus</i>	L	<i>Dicrurus paradiseus</i>	L
<i>Reinwardtipicus(Chrysocolaptes) validus</i>	L	<i>Oriolus xanthonotus</i>	L
<i>Corydon sumatranus</i>	L	<i>Irena puella</i>	W
<i>Cymbirhynchus macrorhynchus</i>	L	<i>Platylophus galericulatus</i>	L
<i>Eurylaimus javanicus</i>	L	<i>Platysmurus leucopterus</i>	W
<i>Eurylaimus ochromalus</i>	L	<i>Corvus enca</i>	W
<i>Cafyptomena viridis</i>	W	<i>Sitta frontalis</i>	L
<i>Pitta arquata</i>	L*	<i>Pellomeum capistratum</i>	L
<i>Pitta baudi</i>	L*	<i>Trichastoma pyrrhogenys</i>	M
<i>Pitta moluccensis</i>	L+	<i>Trichastoma malaccense</i>	W
<i>Hirundo rustica</i>	W+	<i>Trichastoma rostratum</i>	L
<i>Trichastoma bicolor</i>	L	<i>Cyomis turcosa</i>	L

<i>Trichastoma sepiarium</i>	W	<i>Cyomis superba</i>	L*
<i>Malacopteron magnirostre</i>	L	<i>Muscicapella hodgsoni</i>	M
<i>Malacopteron affine</i>	L	<i>Culicicapa ceylonensis</i>	W
<i>Malacopteron cinereum</i>	W	<i>Rhipidura albicollis</i>	M
<i>Malacopteron magnum</i>	W	<i>Rhipidura perlata</i>	W
<i>Malacopteron albogulare</i>	W	<i>Rhipidura javanica</i>	L*
<i>Pomatorhinus montanus</i>	W	<i>Hypothymis azurea</i>	W
<i>Ptilocichia leucogrammica</i>	L*	<i>Philentoma velatum</i>	W
<i>Kenopia striata</i>	L	<i>Philentoma pyrhopterum</i>	W
<i>Napothera epilepidota</i>	M	<i>Terpsiphone paradisi</i>	W
<i>Stachyris rufifrons</i>	L	<i>Pachycephala hypoxantha</i>	M*
<i>Stachyris nigriceps</i>	M	<i>Motacilla cinerea</i>	L+
<i>Stachyris poliocephala</i>	W	<i>Artamus leucorhynchus</i>	L
<i>Stachyris maculata</i>	W	<i>Pityriasis gymnocephala</i>	L*
<i>Stachyris leucotis</i>	L	<i>Gracula religiosa</i>	L
<i>Stachyris nigricollis</i>	L	<i>Anthreptes simplex</i>	L
<i>Stachyris erythroptera</i>	W	<i>Anthreptes malaccensis</i>	L
<i>Macronous gularis</i>	L	<i>Anthreptes rhodolaema</i>	L
<i>Macronous ptilosus</i>	W	<i>Anthreptes singalensis</i>	W
<i>Alcippe brunneicauda</i>	W	<i>Hypogramma hypogrammicum</i>	W
<i>Yuhina everetti</i>	M*	<i>Nectarinia sperata</i>	L
<i>Yuhina zantholeuca</i>	W	<i>Aethopyga siparaja</i>	L
<i>Eupetes macrocerus</i>	M	<i>Aethopyga mystacalis</i>	W
<i>Copsychus saularis</i>	L	<i>Arachnothera longirostra</i>	W
<i>Copsychus malabaricus</i>	L	<i>Arachnothera crassirostris</i>	L
<i>Copsychus pyrropygus</i>	W	<i>Arachnothera robusta</i>	W
<i>Enicurus ruficapillus</i>	L	<i>Arachnothera flavigaster</i>	L
<i>Enicurus leschenauiti</i>	L	<i>Arachnothera chrysogenys</i>	W
<i>Gerygone sulphurea</i>	L	<i>Arachnothera affinis</i>	L
<i>Abroscopus superciliaris</i>	L	<i>Prionochilus thoracicus</i>	W
<i>Locustella certhiola</i>	L+	<i>Prionochilus maculatus</i>	W
<i>Onhotomus atrogularis</i>	L	<i>Prionochilus xanthopygius</i>	W*
<i>Orthotomus ruficeps</i>	L	<i>Prionochilus percussus</i>	W
<i>Orthotomus sericeus</i>	L	<i>Dicaeum chrysorrheum</i>	L
<i>Prinia flaviventris</i>	L	<i>Dicaeum trigonostigma</i>	W
<i>Urosphena (Cettia) whiteheadi</i>	M*	<i>Dicaeum concolor/celebicwn</i>	W
		<i>Dicaeum cruentatum</i>	M
<i>Rhinomyias umhratilis</i>	W	<i>Oculocincta squamifrons</i>	M*
<i>Rhinomyias ruficauda</i>	M	<i>Zosterops everetti</i>	L
<i>Muscicapa sibirica</i>	L+	<i>Erythrura prasina</i>	L
<i>Ficedula dumetoria</i>	M	<i>Lonchura fuscans</i>	L*
<i>Cyomis concreta</i>	W	<i>Lonchura leucogastra</i>	L

Previous observations at Barito Ulu by K.M. Burton, J.T. Marshall and Boedi (Chivers *et al* 1986) incorporate areas further upstream on the Murung and as far south as Teluk Jolo (114° 07'E, 0° 21' S). From this work, and from subsequent records (F.R. Lambert, 1991, *in litt.*) can be added the following species not recorded during our survey, bringing the regional total to 243.

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